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EXAMINER

ZHENG, LOIS L

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



## DETAILED ACTION

### *Status of Claims*

1. No claim amendments are made in view of applicant's response filed 2 October 2007. Therefore, claims 1, 6-11, 13 and 15-25 are currently under examination.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 6-11, 13 and 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonoda et al. US 4,874,480(Sonoda) in view of Heller et al. US 3,619,300(Heller).

Sonoda teaches an electrolytic conversion coating bath comprising 1-50g/l of zinc, 3-140g/l of phosphate and nitric acid(abstract, col. 2 lines 18-30). Sonoda further teaches that its conversion coating solution does not cause sludge formation(col. 4 lines 39-41).

However, Sonoda does not explicitly teach that its nitric acid is present in the claimed amount.

Heller teaches a zinc phosphate coating solution that does not form sludge(col. 2 lines 70-73). Heller's coating solution comprises zinc, phosphate, and nitric acid(col. 3 lines 15-32). Heller further teaches that the weight ratio of nitrate ions to phosphate

ions should be in the range of 1:1 to 4:1 in order to provide sufficient sludge prevention (col. 4 lines 13-24).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the nitrate to phosphate ion ratio of 1:1 to 4:1 as taught by Heller into the conversion bath of Sonoda in order to sufficiently prevent sludge from forming as taught by Heller.

Regarding claims 1, 22-24 and 25, the zinc and phosphate concentrations as taught by Sonoda overlap the claimed zinc and phosphate concentration ranges satisfied by the claimed mathematical conditions. In addition, based on the nitrate to phosphate ion ratio of 1:1 and 4:1, nitrate ion concentration in the coating bath of Sonoda in view of Heller is calculated to be 3-560g/l, which overlaps the claimed nitric acid concentration range. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed zinc, phosphoric acid and nitric acid concentration ranges from the disclosed ranges of Sonoda in view of Heller would have been obvious to one of ordinary skill in the art since Sonoda in view of Heller teaches the same utilities in their disclosed zinc, phosphate and nitrate concentrations ranges.

Regarding claim 6, based on the zinc and phosphate ion concentration as taught by Sonoda in view of Heller, the zinc to phosphoric acid ratio in the coating bath of Sonoda in view of Heller would have overlapped the claimed zinc to phosphoric acid ratio of less than 0.91. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed zinc to phosphoric acid ratio range from the implicitly disclosed range of Sonoda in view of Heller would have been obvious to one of ordinary

skill in the art since Sonoda in view of Heller teaches the same utilities in their implicitly disclosed zinc to phosphate ratio range.

Regarding claims 8, 16 and 19, Sonoda further teaches that the coating bath is applied to a metal surface electrolytically. Therefore, the claimed processing steps would have inherently taking place in the process of Sonoda in view of Heller.

Regarding claims 9-10, 17 and 20, Sonoda further teaches a coating temperature of 30-80°C and a current density of 0.2-30A/dm<sup>2</sup>(col. 2 lines 39-55), which overlap the claimed coating temperature and current density. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed coating temperature and current density from the disclosed ranges of Sonoda in view of Heller would have been obvious to one of ordinary skill in the art since Sonoda in view of Heller teaches the same utilities in their disclosed coating temperature and current density ranges.

Regarding claims 11, 18 and 21, Sonoda further teaches the claimed pretreatment with an aqueous colloidal solution containing titanium oxide(col. 2 line 63 – col. 3 line 10).

Regarding claims 7, Sonoda further teaches the claimed addition of hydrogen peroxide(col. 2 lines 29-30).

Regarding claims 13 and 15, Heller further teaches the addition of alkali metal fluorides and bifluorides in an amount of 0.25-2.5g/l(abstract) in order to allow the coating bath to be operated successively or simultaneously(col. 3 lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the fluoride compounds as taught by Heller into the coating bath of Sonoda in order to allow

the coating bath to be operated successively or simultaneously as taught by Heller.

Therefore, the fluoride compound concentration as taught by Sonoda in view of Heller would have overlapped the claimed fluoride compound concentration as recited in claims 13 and 15. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed fluoride compound concentration range from the disclosed range of Sonoda in view of Heller would have been obvious to one of ordinary skill in the art since Sonoda in view of Heller teaches the same utilities in their disclosed fluoride compound concentration range.

#### ***Response to Arguments***

4. Applicant's arguments filed 2 October 2007 have been considered but they are not persuasive.

In the remarks, applicant' argues that there is no reason for one of ordinary skill in the art to look to Heller to solve the problem of sludging since Sonoda already teaches preventing formation of sludge.

The examiner respectfully disagrees. Sonoda's coating solution comprises zinc, phosphoric acid and nitric acid. However, Sonoda does not teach the amount of nitric acid in the coating solution. One of ordinary skill in the art looking to use the coating solution of Sonoda would have also looked for guidance in the zinc phosphate coating art on suitable nitric acid concentration that does not jeopardize the existing non-sludging formulation in the coating solution of Sonoda. Heller provides teaching of proper ratio between nitrate and phosphate ions in the coating solution without forming sludge. Therefore, one of ordinary skill in the art would have utilized the proper

nitrate/phosphate ratio as taught by Heller when implementing the coating solution of Sonoda in order to keep the coating solution sludge free.

Applicant further teaches that Comparative Examples 1-3 as discussed in the instant specification provides sufficient evidence to show the significance of the claimed mathematical equation 6.

The examiner does not find applicant's argument convincing since Comparative Examples 1-3 only show sludge formation at zinc concentrations higher than the calculated upper limit and do not show sludge formation at zinc concentrations lower than the calculated lower limit. Therefore, the comparison between Examples 1-3 and Comparative Examples 1-3 as disclosed in the specification is not commensurate with the scope of the claimed invention, wherein the zinc concentration is represented by a mathematical formula defining an upper limit and a mathematical formula defining a lower limit.

#### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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LLZ

  
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